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09/928,490	08/14/2001	Steffen Tschirch	003810-019	7953

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 05/16/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,490

Applicant(s)

TSCHIRCH, STEFFEN

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The necessary documents have been filed in parent Application No. 09/319,585.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 8/14/01 has been considered by the examiner.

Drawings

Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. See page 1 of the specification.

Figure 29 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. On page 2, the specification states the figure shows the basic operation of a prior art device.

The drawings are objected to under 37 CFR 1.84(h)(5) because Figures 11 and 12 show(s) modified forms of construction in the same view. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (d) BRIEF SUMMARY OF THE INVENTION.
- (e) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (f) DETAILED DESCRIPTION OF THE INVENTION.
- (g) CLAIM OR CLAIMS (commencing on a separate sheet).
- (h) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

The disclosure is objected to because of the following informalities:

- 1) on page 1, last paragraph, and page 2, line 1 "in areas a and b" should state "in areas a and c";
- 2) specific claims are referred to throughout the specification. It is improper to refer to specific claims as they may be amended or canceled during prosecution;
- 3) the specification refers to a "Peltier element" on page 4, sixth paragraph and page 11, second paragraph. It is unclear what a "Peltier element" is defined as;
- 4) the specification refers to an "angle 4-6" on page 7, second paragraph, among other instances. It is unclear how an "angle 4-6" is defined; and,

Art Unit: 1745

5) a description is required for each figure and no description is provided for Figures 11a, 11b, 11c, 12a, 12b, 12c, 21a, 21b, 21c, 22a, 22b, 26a and 26b.

Appropriate correction is required.

Claim Objections

Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

The dashes (“-”) in claims 1, 10 and 15 should be removed.

The term “plate-like” in the claims is a relative term which renders the claims indefinite. The term “plate-like” is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Examiner suggest the term “like” be deleted.

The claims refer to a location which is parallel to an edge of the electrode plates (for example see claim 1, lines 10-11). However, there are various locations the plate-like element could be placed and be parallel to an edge surface because an edge is a linear dimension. Thus, it is unclear where the plate element is located.

The phrase “slightly inwardly inclined in the vicinity of the level” in claim 1 is indefinite. It is unclear what “in the vicinity of the level” is indicating. The term “slightly” is indefinite because “slightly” is not defined by the specification or the claims.

In claim 3, “in one piece as angles” is indefinite. It is unclear what is being claimed.

Claim 8 recites the limitation “the facing liquid electrolyte circulating devices”. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites “is placed on the casing bottom or close to the latter on side walls”, which is not grammatically correct.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the claim does not recite how the heating element is constructed to produce electrolyte flow upon heating. Specifically, “which is constructed in such a way as to produce a powerful electrolyte flow on heating” is indefinite.

Regarding claim 12, it is unclear how the heating element is placed “on or in an inner partition of the battery” when claim 10 requires the heating element to be placed “on the casing bottom” or “on side walls”.

In claim 15 “liquid electrode” should recite “liquid electrolyte”.

Art Unit: 1745

The term "Peltier element" in claim 16 is a relative term which renders the claim indefinite. The term "Peltier element" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It appears "Peltier element" is a trademarked product. Trademarks are not permitted in claim language.

To the extent the claims are understood in view of the 35 USC 112 rejections above, note the following prior art rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Delaney et al., US 5,096,787.

Delaney teaches a hydrostatic pump for a battery experiencing sudden changes in acceleration or direction. The pump uses the motion induced waves in the electrolyte to develop localized hydrostatic heads and create circulation in the electrolyte. The battery includes a casing with side walls, a bottom and a lid. The electrolyte plates are vertically standing and the liquid electrolyte level extends beyond the upper edge of the electrodes. See Figures 1 and 2. Delaney discloses it is known in the art to provide a pump involving hydrostatic heads which are defined by one wall spaced from the cell wall. A second wall extends a short distance above the surface of the liquid end, and together with the cell wall, forms a mouth of the pump. See col. 1,

Art Unit: 1745

lines 60-col. 2, lines 6. Further disclosed, vertical surge of the electrolyte, or splashing, is maintained at low levels due to geometrical differentials between upper and lower dimensions of the pump. See col. 2, lines 30-34. Delaney is directed toward a hydrostatic pump having no moving parts and utilizes the change in velocity of a vehicle in which a battery incorporating the pump is placed to thoroughly mix the electrolyte in the battery. The pump element is in the form of a partition bridging the side walls of the cell container and spaced apart from an end wall. See col. 2, lines 43-50. The pump reduces electrolyte stratification. The partitions 24,26 (second plate element) include a front lip 24c,26c to prevent the electrolyte from splashing out once the mouth receives a wave. Each pump has side sealing flares or standoffs 24d,26d (first plate element) at the top to seal the pump in place in its cell (clms 1-3,7,8). See col. 5, lines 23-27. Note Figure 1. In Figure 1, 30a,36a (first and second return flow preventers) substantially reduce the upward flow and minimizes splashing of the electrolyte, col. 5, lines 52-54 (clm 4,9). The pump of Delaney uses various forms of restricting elements (return flow preventers) which reduce the effect of backwash upon the proper functioning of the pump. Restricting elements include non-woven fibers 118 shown in Figure 7a (clm 5), planar elements 110 shown in Figure 5c, and orifice plates 120 shown in Figure 7b (clm 6). See col. 7, lines 10-37.

Thus the claims are anticipated.

Claims 10-14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Braun, US 5,599,636.

Braun teaches a battery heating device including a temperature sensor and at least one heating element in a liquid and acid-proof arrangement inside a battery (clm 12). The heating

Art Unit: 1745

element is a power transistor (clm 11) secured to a cooling plate. See abstract. The transistor on the cooling element are disposed fluid-proof and acid-proof in a foil in the battery below the plates (clm 13,14). See col. 7, lines 60-63. The battery includes side walls, a bottom, a lid and an acid electrolyte.

Thus the claims are anticipated.

Claims 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Bolger, US 5,665,484.

Bolger teaches, in the discussion of the prior art, previous methods to control and homogenize the temperature of the electrolyte include placing cooling elements in the electrolyte above the plates with cooling medium circulated through them (clm 15). See col. 2, lines 65-col. 3, lines 1. Bolger is concerned with liquid electrolyte lead acid batteries which inherently have a case with side walls and a lid. See col. 1, lines 10-15.

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delaney et al. (5,096,787) in view of Braun (5,599,636), and further in view of Bolger (5,665,484).

See discussion of Delaney, Braun and Bolger above.

Delaney does not explicitly teach a liquid electrolyte circulating device may be a heating element or a cooling element. Delaney teaches a hydrostatic pump for circulation of electrolyte.

Braun does not explicitly teach the temperature inside the battery is controlled using a cooling device or a hydrostatic pump. Braun teaches a heating element to control battery temperature.

Bolger does not explicitly state a least two of the following: a cooling element, a heating element and a hydrostatic pump may be used together to circulate the electrolyte.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to combine any known elements for circulating liquid electrolyte. Bolger teaches it is known in the art achieve electrolyte homogenization by use of a hydrostatic pump or by use of a cooling element in the electrolyte above the electrode plates. Braun teaches the use of a heating element and Delaney teaches the use of a hydrostatic pump. One of skill in the art would be motivated to combine these elements for circulating the electrolyte because it is well known in the art that the circulation of electrolyte causes the electrode plates to be used in a more even manner, significantly improving electrical performance and extending the life of the battery (see Bolger col. 1, lines 45-50).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Klink et al teaches a battery box for a plurality of electrochemical cells which may include a heater. See col. 3, lines 52-55.

Art Unit: 1745

Aronson teaches a battery for use as a power source in an electrical vehicle. The temperature of the electrolyte in a holding tank and in the battery casing can be appropriately monitored and adjusted by applying external heat or cooling to the tank. See col. 5, lines 32-35.

Brecht teaches a battery electrolyte circulation system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

May 13, 2003


Patrick Ryan
Supervisory Patent Examiner
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